

Application No. 10/058,284

Art Unit 1742

March 8, 2004

Reply to Office Action of October 8, 2003

**AMENDMENTS TO THE CLAIMS**

This listing of claims will replace all prior versions, and listings, of claims in the present application.

**Listing of Claims:**

1. **(Original)** A copper alloy foil, which contains, by mass percentage, one or more of the additive elements of from 0.01 to 2.0% of Cr and from 0.01 to 1.0% of Zr, the balance being essentially Cu and unavoidable impurities, and which has  $600\text{N/mm}^2$  or more of tensile strength, 50%ICAS or more of electric conductivity,  $2\text{ }\mu\text{m}$  or less of the surface roughness in terms of the ten-point average surface-roughness (Rz) and  $8.0\text{ N/cm}$  or more of  $180^\circ$  peel strength when directly bonded with a polyimide film without roughening plating.

2. **(Currently Amended)** A The copper alloy foil according to claim 1, wherein it further contains from 0.005 to 2.5% in total of one or more of the second additive elements selected from the group consisting of Ag, Al, Be, Co, Fe, Mg, Ni, P, Pb, Si, Sn, Ti and ~~Zn~~, Zn.

3. **(Original)** A copper alloy foil, which contains, by mass percentage, one or more of the additive elements of from 1.0 to 4.8% of Ni and from 0.2 to 1.4% of Si, the balance being essentially Cu and unavoidable impurities, and which has  $650\text{N/mm}^2$  or more of tensile

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strength, 50%ICAS or more of electric conductivity, 2  $\mu\text{m}$  or less of the surface roughness in terms of the ten-point average surface-roughness ( $R_z$ ) and 8.0 N/cm or more of 180° peel strength when directly bonded with a polyimide film without roughening plating.

4. (**Currently Amended**) A The copper alloy foil according to claim 3, wherein it further contains from 0.005 to 2.5% in total of one or more of the second additive elements selected from the group consisting of Ag, Al, Be, Co, Fe, Mg, P, Pb, Sn, Ti and Zn.

5. (**Original**) A printed circuit board which comprises: a copper alloy foil, which contains, by mass percentage, one or more of the additive elements of from 0.01 to 2.0% of Cr and from 0.01 to 1.0% of Zr, the balance being essentially Cu and unavoidable impurities, and which has 600N/mm<sup>2</sup> or more of tensile strength, 50%ICAS or more of electric conductivity, 2  $\mu\text{m}$  or less of the surface roughness in terms of the ten-point average surface-roughness ( $R_z$ ), and which is not subjected roughening plating; and, a polyimide film, which is directly bonded with the copper alloy foil and which has 8.0 N/cm or more of 180° peel strength.

6. (**Currently Amended**) A The printed circuit board according to claim 5, wherein the copper alloy foil further contains from 0.005 to

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**Art Unit 1742**

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2.5% in total of one or more of the second additive elements selected from the group consisting of Ag, Al, Be, Co, Fe, Mg, Ni, P, Pb, Si, Sn, Ti and ~~Zn~~, Zn.

7. (**Original**) A printed circuit board, comprising a copper alloy foil, which contains, by mass percentage, one or more of the additive elements of from 1.0 to 4.8% of Ni and from 0.2 to 1.4% of Si, the balance being essentially Cu and unavoidable impurities, and which has 650N/mm<sup>2</sup> or more of tensile strength, 50%ICAS or more of electric conductivity, 2  $\mu$ m or less of the surface roughness in terms of the ten-point average surface-roughness (Rz), and which is not subjected to roughening plating; and, a polyimide film, which is directly bonded with the copper alloy foil and has 8.0 N/cm or more of 180° peel strength.

8. (**Currently Amended**) A The printed circuit board according to claim 7, wherein it further contains from 0.005 to 2.5% in total of one or more of the second additive elements selected from the group consisting of Ag, Al, Be, Co, Fe, Mg, P, Pb, Sn, Ti and Zn.